

Vitelline artery remnant: A rare cause of chronic abdominal pain in an adult

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ABSTRACT

Vitelline vascular remnant is a rare clinical entity in adults. Usually, they cause intestinal obstruction, especially in children. In adults, it can cause chronic abdominal pain. We report the case of a 53-year-old man who presented with recurrent abdominal pain for the past 1 year. Contrast-enhanced computed tomography of the abdomen and colonoscopy was normal. Diagnostic laparoscopy revealed a single band-like structure between the distal ileal mesentery and anterior abdominal wall near the umbilicus. Band resection was done. These bands are the rare cause of chronic abdominal pain in adults and difficult to diagnose, preoperatively. In these cases, laparoscopy is an effective diagnostic as well as a therapeutic tool.

Key words: Chronic abdominal pain, laparoscopy, vitelline artery remnant, vitellointestinal duct

Chronic abdominal pain is a diagnostic dilemma for surgeons. In adults, it is mostly due to neoplastic pathology, inflammatory bowel disease, adhesions, and other chronic conditions. A vitelline duct or vitelline vascular remnant is a rare congenital band presenting in less than 2% of the general population [1]. It can cause abdominal pain, bowel obstruction, intestinal hemorrhage, umbilical sinus, or fistula which is commonly seen in infants [2]. Despite recent imaging modalities, accurate diagnosis of chronic abdominal pain still difficult. Congenital band of vitelline vessels remnant is a rare cause of chronic abdominal pain in adults.

CASE REPORT

A 53-year-old patient presented with recurrent episodes of pain abdomen and bloating for the past 1 year. The pain described was colicky and intermittent across the lower abdomen, mainly in the right lower quadrant. Medical history was not significant. He was admitted twice for abdominal pain 10 months back and the pain settled conservatively. He used to take oral analgesics for abdominal pain.

General physical and abdominal examination were unremarkable. On examination, vital signs were stable with a blood pressure of 110/70 mmHg, pulse rate of 76/min, and afebrile temperature.

Routine blood tests including complete blood counts (CBC), renal function test (RFT), liver function test (LFT), and random


blood sugar (RBS) were in the normal range. Inflammatory markers C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were within normal limits. Plain abdominal radiographs were unremarkable. Ultrasonography (USG) of the abdomen was normal. He was further investigated, which included a contrast-enhanced computed tomographic (CECT) scan of the abdomen and colonoscopy, all of which did not show any abnormality or any evidence of bowel obstruction.

The patient counseled for a diagnostic laparoscopy procedure and prepared for surgery. Diagnostic laparoscopy revealed a single band-like structure stretching between the distal ileal mesentery and the anterior abdominal wall near the umbilicus (Fig. 1). Other intraperitoneal organs were normal. There was no other abnormality identified on diagnostic laparoscopy. The band was divided near the umbilicus but had the appearance of a blood vessel. Ligaclip applied near the ileal mesenteric end of the band and divided. A resected specimen of the band was sent for histopathological examination (HPE) which showed a vitellointestinal artery remnant. HPE confirms the diagnosis of a vitelline artery remnant.

The post-operative period was uneventful and the patient was discharged on the second post-operative day. The patient was followed up postoperatively in the outpatient clinic and there is complete resolution of his chronic abdominal pain.

DISCUSSION

This case report describes the unique finding of a congenital vitelline vessels remnant band extending from the umbilicus to distal ileal mesentery and causing chronic abdominal pain due to

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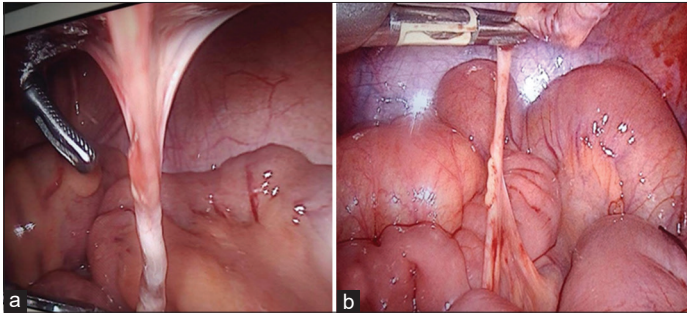


Figure 1: Intraoperative laparoscopic image showing band-like structure attached to the (a) anterior abdominal wall near umbilicus and (b) distal ileal mesentery.

intermittent twisting of the bowel around it. The causes of chronic abdominal pain can be irritable bowel syndrome, functional dyspepsia, pelvic inflammatory disease, inflammatory bowel disease, malignancy, ovarian cysts, Hiatal and inguinal hernias, gallstones, and endometriosis, etc.

Embryologically, the omphalomesenteric tract contains three structures: The vitelline duct, vein, and artery. Vitellointestinal duct (VID) or omphalomesenteric duct (OMD) connects the yolk sac with the primitive midgut of fetus and it passes through the umbilicus. The yolk sac being a highly vascularized organ receives many direct vitelline arteries from the primitive aorta. As VID involutes during 5–7 weeks of the intrauterine life, so do the vitelline arteries. The proximal extent of the artery on the right forms the superior mesenteric artery. Failure of complete obliteration of VID can result in remnants. Meckel's diverticulum (MD) is by far the most common anomaly of the omphalomesenteric tract. It is the most common congenital anomaly of the gastrointestinal tract. Remnants and anomalies of the vitelline circulation are less common and have been reported in 8–15% of cases of MD [3]. Their remnants manifest as fibrous bands usually attached at its two extremities coursing from the ileal branch of the superior mesenteric artery to a MD as a mesodiverticular band or to the anterior abdominal wall at the umbilicus. These bands may be completely patent, segmentally patent, or not patent [4]. Less often, it connects a MD to the ileal mesentery. Rarely, the cord is attached at only one end [5]. A vitelline vascular remnant without MD is a rare condition [6].

In the absence of MD, it is very difficult to differentiate between a vitelline duct remnant and a vitelline artery remnant as they grossly appear identical. Careful examination of the band itself and its origin from the small bowel and mesentery will give a clue. If a portion of the band can be seen coursing over the bowel to the mesentery, one can assume that the obstructing band is a vascular rather than a duct remnant. Inadvertent division of such bands without recognizing their vascular nature can prove fatal and cause post-operative life-threatening hemorrhage [7].

Congenital bands are established causes of acute intestinal obstruction especially in the pediatric population but are relatively uncommon and difficult to diagnose preoperatively. Michopoulou *et al.* [4] and Jalil *et al.* [2] reported a vitelline artery remnant in adults causing pain and intestinal obstruction. We reported a

rare case of a remnant of the vitelline artery without MD causing intermittent chronic abdominal pain in an adult. The most likely mechanism of the pain was due to recurrent partial twisting and untwisting of the bowel around the band.

Chronic abdominal pain is a difficult complaint. Despite recent advances in imaging, it is a major diagnostic challenge to surgeons. Laparoscopic exploration of the abdominal cavity in patients with chronic abdominal pain can identify pathology in 65–85% cases [8]. Surgical excision of the vitelline duct or vessel remnant is the curative treatment and many cases were successfully treated by laparoscopic surgery. Date *et al.* [9] and Humi *et al.* [10] were used laparoscopy successfully in the management of vitelline artery remnant.

CONCLUSION

Vitelline vascular remnant as a congenital band is a rare cause of abdominal pain in adults and usually presents a diagnostic challenge to the surgeons. It is difficult to achieve a definitive diagnose of vitelline vascular remnant preoperatively. Laparoscopy can be an effective tool for the diagnosis and treatment of preoperatively undiagnosed cases of chronic abdominal pain.

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